Exaptation from the perspective of construction morphology

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In this paper, we explore how the process of exaptation can be modelled within a constructional framework of morphology. Assuming that constructions (of varying levels of schematicity and complexity) are organized in constructional networks, we consider issues related to 'obsolescence' and 'novelty' using a model of morphology that draws on the work of Booij (2010). We present various case studies of linguistic changes in a number of Germanic languages (in both their standard and non-standard varieties), exploring in each case the extent to which the changes constitute cases of exaptation. For each case study, we also consider how these changes can be understood within a constructional approach to language. Our focus is on constructional morphology, though some changes involve neoanalyses of larger (syntactic) structures. The discussion also makes reference to issues in diachronic construction grammar, particularly the notion of constructional change as outlined by Traugott & Trousdale (2013).

1. *Introduction*

Since Roger Lass introduced the term to linguistics in 1990, 'exaptation' has been invoked to account for a number of developments which do not appear to fit neatly into established processes of language change like grammaticalization or lexicalization. Some case studies specifically aimed to establish whether the term might usefully be adopted by historical linguists, and if so, to see how the concept would need to be refined. In others, exaptation proved to be a 'convenient label' for changes that seemed 'unpredictable' (Van de Velde & Norde (this volume)). Thus, the past 25 years have seen the debate concerning the place of exaptation in linguistic change becoming increasingly complex. As a result, there appears to be little consensus on what properties distinguish exaptation from other complex changes such as (de)grammaticalization, or even what the definitional properties of exaptation are. It is also clear that the conceptualization of exaptation in linguistics has drifted away considerably from the original ideas in Gould & Vrba (1982). The common denominator is still a 'functional novelty', but where linguistic exaptation is strongly associated with obsolescent (mainly inflectional) material, this is not so in biological exaptation. As the famous feathers example shows, a trait that is fully functional can nevertheless be exapted (Gould & Vrba

1982). Conversely, biological exaptation is typically followed by adaption, increasing fitness as the result of natural selection. For instance, Jurassic fossils of *Archeopteryx* suggest that this first known bird, though thoroughly feathered, was not a very good flier, but subsequent adaption resulted in sophisticated wings (Gould & Vrba 1982: 7; see Van de Velde & Norde (this volume) for more discussion and examples). Although the relation between exaptation and adaptation has been largely ignored in the linguistic literature, we think it may be useful to include it in our approach, since we will argue that biological adaptation may share parallels with the strengthening of a (sub)schema, which we will term optimization of a schema.

The most notorious property of exaptation is that the reused material had somehow become 'junk', a term introduced in the title of Lass's 1990 paper. The obvious problem with this notion is that 'junk morpheme' is a *contradictio in terminis*. A form that no longer carries meaning, is no longer distinguishable as a morpheme, and hence cannot be exapted (Norde 2009: 117).[i] Although Lass (1997) modified his view that 'junkness' is a prerequisite for exaptation to occur, the concept still features in the exaptation literature (see in particular Gardani, Meul & Vermandere, and Von Mengden, all in this volume). In an important contribution to this discussion, Willis (2010) has argued that rather than 'junk', exapted features were 'obsolescent'. Lass (1990) already observed that marginalized items may either (i) disappear, (ii) be kept in petrified expressions or suppletive patterns or (iii) be re-used in a different function.

From a network-based perspective (see section 2.2), the changes prior to, and following the marginalization of a construction are of particular interest. We note here that becoming 'peripheral' may be associated with two distinct types of change: the marginalization of an established construction, and the creation of an atypical member of a set. An example of the former type is the loss of the possessive dative construction in Swedish (Norde 1997: 207-214). This particular possessive construction was used in contexts of inalienable possession (e.g., body-parts), but it disappeared along with the demise of the dative case, and was being replaced by s-genitive or adpositional constructions. An example of the latter type is the use of English *a deal of* in non-partitive contexts, which as quantifier or degree modifier appears conventionally with the adjectives *good* or *great* (e.g., *that's a good/great deal better* vs. **that's a deal better*), a property not shared with other quantifiers deriving from binominals (Traugott & Trousdale 2013: 209-214). Thus peripheral status may be what links both the end stage of an existing construction and the incipient stage of a new construction.

The second central property of exaptation as introduced by Lass (1990) is 'conceptual innovation' or 'novelty', and this property, too, has been the subject of criticism. Traugott (2004: 6) for instance, writes: "If what is special to exaptation on these various views is that the model is new in a way that is different from grammaticalization, we must ask crucially, what is 'conceptual novelty'? Can new categories really 'be invented more or less ex vacuo' (Lass 1990: 82)? Does exaptation really lead to new models and categories via fairly radical changes that are not local or contextualized in ways typical of grammaticalization?". We think this is a valid point, and our answer to Traugott's rhetorical second question is "no". From a constructional perspective, it is useful to consider the locus of innovation in the constructicon (understood as the set of constructions known by an individual speaker, cf. Jurafsky 1992, Goldberg 2006). Models of (diachronic) construction grammar distinguish between lower and higher level generalizations (properties which hold for more substantive and more schematic constructions respectively), from individual constructional types (micro-constructions, following the terminology of Traugott & Trousdale (2013) to overarching schemas (generalizations across micro-constructions). Mechanisms of change such as neoanalysis and analogization may give rise initially to new micro-constructions, which may in turn develop slots and become low-level, and eventually higher-level schemas. The rise of the determiner schema in Germanic languages is a case in point. A detailed discussion of this development is clearly beyond the scope of this paper, but it is evident that this schema did not arise *ex vacuo*. Rather, is the result of a very complex set of changes involving both grammaticalization (e.g., of demonstratives developing into suffixed definite articles in the Scandinavian languages), exaptation (of the s-genitive, see section 3.1.1), and functional expansion (of possessive pronouns; for details see Trousdale & Norde 2013: 40-42). All these changes, which partly overlapped historically, contributed to a restructuring of the Noun Phrase, with a specific slot for determiners, which in turn may have attracted new lower-level constructions to the determiner schema.

Another point of controversy is the question of whether novelty pertains to micro-constructions, or whether it pertains to schemas. For Simon (2010: 48-49) exaptation must involve the emergence of a new (grammatical) category. For this reason, the analogical extension of umlauted plurals in Middle High German (each of which change is novelty on the micro-constructional level) is not a case of exaptation in Simon's view. Although these individual changes involve a phonological opposition (assimilation to a following vowel) adopting a morphological function (marking plural number), PLURAL is not a new morphological category in German: what happened here is simply that a pattern of plural

marking in one group of nouns came to be extended to another one. We will however argue that exaptation implicates a new inheritance link to a schema, but the schema itself need not be new (see further section 1.3).

As far as we know, the concept of exaptation has not yet been approached in detail from a constructional perspective, with the exception of some brief references in Booij (2010: 211, 234). In this paper we explore whether such a perspective can offer new insights in the central properties of exaptation, and, eventually, whether exaptation is a useful concept in constructional approaches to change. In particular, we will address the question of whether exaptation can be fruitfully conceptualized as changes in constructional networks, whereby the concepts of obsolescence, novelty and schema strengthening will be examined in more detail.

To this end, we will review four cases of (alleged) exaptation of inflectional material that have been relatively well described in earlier literature. These are (former) genitival *-s* in Swedish and Dutch, the Dutch *der*-genitive, adjectival *-er* in Swedish and Danish, and adjectival *-e* in Dutch and Afrikaans. For our analysis, we will adopt basic concepts and the formalism of Construction Morphology (Booij 2010, 2013); for the representation of grammatical relations as constructional networks we primarily refer to Croft (2001), Bybee (2010), and Van de Velde (2014).

The subsequent outline of this paper is as follows: in section 2, we provide an overview of the key frameworks we use in the chapter. In section 3, we present the case studies. For each case study, we provide an outline of the changes involved, explore the ways in which these changes do or do not tally with the constructional approach to exaptation presented in Section 2. Section 4 is the concluding section, where we consider the question of whether exaptation is a useful concept in diachronic construction grammar.

2. *The frameworks: Constructional approaches to morphological change, with special reference to exaptation*

1.1 *Change in constructional terms*

In this section, we provide an overview of some of the key issues in a constructional approach to language change, especially as it relates to changes in morphology. This approach largely follows the framework laid out by Traugott & Trousdale (2013). For a constructional

approach to morphology, see Booij (2010, 2013); for a quantitative approach to morphological change, see Hilpert (2013). We consider constructional change to be a neoanalysis of one property of an existing construction (for instance, its phonology or its semantics); constructionalization, by contrast, involves the coming into being of a new conventional symbolic unit, crucially with new morphosyntax and new coded semantics. Constructions are linked in a network, and are characterized by their location on a number of gradients: a gradient of complexity (from indivisible atomic constructions, to complex ones), a gradient of generality (from highly specific to highly general, in both form and meaning), and a gradient of analysability (from idiosyncratic to transparent). A further gradient concerns an aspect of constructional function, namely whether they serve to encode meanings that are largely contentful (imbued with lexical semantics) or largely procedural (concerned with expressing relations between contentful constructions, or denoting aspects of discourse structure, for instance). A construction such as [[king]$_N$ ↔ [male monarch]] is low in complexity, generality and analysability, and is contentful (in particular, referential); by contrast, a construction such as the English Resultative (whose constructs include expressions such as *He followed John home* and *The lake froze solid*) is much higher in complexity, generality and analysability, and involves more in the way of procedural meaning. Word formation schemas such as [[x-ish]$_A$↔ [‘somewhat or marginally X’]], as in *blueish* and *out-of-the-way-ish*, idioms such as *to burst into song*, and light verb constructions such as *take a walk*, all show varying degrees of complexity, generality and analysability, and are located at various points on the contentful-procedural continuum.

For our representation of morphological constructions, we follow Booij (2010). In this model, instances of use of the kind *playable*, *observable* and *treatable* are linked to a schema which has been abstracted across these instances of use, and in turn sanctions new tokens such as *crowdsourceable* “can be crowdsourced”. The most general schema for items of this kind may be represented as follows (Booij 2013: 256):

(1) $[Vtr_i\text{-able}]_{Aj} \leftrightarrow [[\text{CAN BE SEM}_i\text{-ed}]_{\text{PROPERTY}}]_j$

In (1), the double arrow indicates (partial) correspondences between the form and meaning parts of the construction, marked by co-indices. An issue of relevance to the present article concerns the questionable status of (bound) morphemes as constructions. Goldberg (1995: 4) suggests that “morphemes are clear instances of constructions in that they are pairings of meaning and form that are not predictable from anything else”, though she

excludes morphemes in a list of construction types in Goldberg (2009). This latter position accords with Booij (2010: 15), who suggests that "morphemes are not linguistic signs, i.e., independent pairings of form and meaning. The minimal linguistic sign is the word." In our representations of morphological schemas, such as (1), we therefore use hyphens to indicate the dependent status of bound morphemes, in terms of both form and meaning.

There are various subschemas associated with the more general pattern in (1). For instance, a tiny subschema involving communication has the meaning "can be contacted via x", where x is the means of electronic communication, allows for tokens such as *skypeable*, *facetimeable*, *textable*. A similar pattern has the meaning "pleasant to x", as in *drinkable* (as in *that wine is very drinkable*) where the basic 'can be X-ed' reading is enriched. As Booij (2010) observes, this approach to morphology suggests a hierarchical lexicon in which default inheritance plays a significant role: the subschemas all inherit the more general meaning $[[\text{CAN BE SEM}_i\text{-ed}]_{\text{PROPERTY}}]_j$, to which the more specific meaning (involving communication, or pleasure, and so on) is added. The variability that we see with the *-able* construction in English is typical of constructional knowledge more generally; furthermore, as the basic units of language in this model, constructions are subject to particular kinds of change.

1.2 *Constructional networks*

Networks play an essential role in models of construction grammar, but they have been conceptualized in different ways. Bybee (2010: 14), for instance, construes knowledge of language as a network of 'exemplar representations', which are shaped by experience and may contain 'all the information a language user can perceive in a linguistic experience', such as information about phonetic detail, meaning and inferences made from this meaning, and properties of linguistic and social context. Generalizations are formed on the basis of an accumulation of a set of similar usage events, but crucially, once generalizations have been formed, the examples upon which they are based are not necessarily discarded (Bybee 2010: 17).

In Bybeean networks, relations can be formed "on various levels and along various dimensions" (Bybee 2010: 23), such as the phonetic dimension, or in terms of similarity of meaning or morphological structure. For instance, the adjective *unbelievable* is linked both to the verb *believe*, from which it is derived, and to adjectives sharing the same suffix (e.g., *readable, washable*), or prefix (e.g., *unattractive*, *unwarranted*). These relations differ in

strength, depending on the degree of phonetic and semantic similarity. One advantage of this approach is that an exhaustive analysis into morphemes is not necessary, which means that even forms with opaque morphological structure can be included in the network, e.g., *had*, which on account of its final [d] may still be connected to regular past tenses even though [d] in *had* is not a suffix.

Other approaches (e.g., Croft 2001) focus on the hierarchical organization of networks, whereby each construction is represented by a separate node, and specific constructions (what we call micro-constructions) are type-instances of more schematic constructions (what we call schemas and subschemas). Crucially, constructions may have 'multiple parents'. For example, the sentence *I didn't sleep* is an instantiation of both the Intransitive Clause construction, and of the Negative construction (Croft 2001: 25-6). Further, a schema may sanction several subschemas — in Germanic languages, preterites and participles may be formed either by ablaut patterns or by a dental suffix (or a combination of both), German plural nouns may be formed by suffixes or vowel mutation (or a combination of both), and so on. For this phenomenon Van de Velde (2014) proposes the term 'degeneracy' (like exaptation, this is a term borrowed from evolutionary biology), underlining its implications for diachrony. Since degeneracy involves many-to-many relationships between form and function, or between schemas and subschemas, loss of one function (or subschema) mostly does not lead to renewal. Rather, it involves "strengthening of already available resources with extension to new domains when a subsystem comes under pressure" (Van de Velde 2014: 173). As we intend to show in our discussion of (alleged) cases of exaptation, this is an important observation, because some changes that have been considered exaptations in earlier literature actually involve strengthening of one particular subschema.

Evidence from usage-based research suggests that cognitive representations are sensitive to experience, e.g., frequency of use. It seems plausible that frequency of use strengthens the representation of a particular node in the network. An important concept in this model is the "conserving effect of token frequency" (Bybee 2010: 24): exemplars are strengthened by each token of use. The effects of this are, for example, that stronger exemplars are easier to access, e.g., in lexical decision tasks, and that they show stronger morphological stability (the well-known observation that irregular forms are usually of high frequency). The fate of items which show decrease in token frequency is variable. In some cases, the item is lost (e.g., the Old English lexical item (*iht* "creature") or retained as part of a fossilized expression (e.g., Old English *wer* "man", retained in *werewolf*); in the case of

inflectional morphology, inflected forms may be lost and replaced by regular items (e.g., *clomb* is replaced by *climbed*), or exapted.

1.3 *Exaptation in constructional terms*

In this section, we explore some of the issues surrounding exaptation from the perspective of diachronic construction grammar. A major issue is the notion of exaptation as the reuse of 'junk' (Lass 1990). This characterization is no longer typical of work on exaptation in linguistics (see the revised position of Lass 1997, and also Willis 2010 on obsolescent morphology), but it nevertheless captures the insight that some morphological material is 'put to use' by speakers more extensively than other morphological material is, suggesting that range of host-classes, connectivity in the network (Norde 2014) and token frequency may be critical factors in exaptation. The narrower the range of hosts, the lower the number of connections to other nodes in the network, and the less frequent the material is used, the more marginal the exponent becomes. This issue of increased marginalization is important in the final stages of grammaticalization. The refunctionalization of the material in a new linguistic domain means that the expression becomes more entrenched as a type, and better integrated into the network, as we will argue in the next sections.

Adopting the view that grammar is a network of constructions at different levels of schematicity, we consider those developments which may be characterized as exaptations as processes involving various constructional changes, whereby the link between a subschema and one higher-level schema is severed, and the subschema comes to be aligned to a different higher-level schema. In constructional terms, then, obsolescence and novelty may be recast as the severance of one inheritance link and the establishment of another one. This focus on links, rather than on the conceptual innovation at the level of (sub-)schemas, is key to our approach. It is important that both criteria, i.e., severance of one link and establishment of a new one, are met, otherwise each new node in the network would be an instance of exaptation. Considering exaptation a kind of change that may affect sub-schemas, not micro-constructions, further restricts the scope of the concept. On this view, fully substantive micro-constructions cannot be exapted. Inflectional affixes, on the other hand, which cannot exist outside of inflectional schemas in particular complex constructions, e.g., a binominal NP (in the case of a genitive suffix), or a clause (in the case of a nominative suffix) may become part of a new subschema. This is also true for portmanteau forms such as English *was* and *were*,

which in some varieties have been exapted as polar elements (affirmative *was* vs. negative *weren't*; Willis, this volume).

3. *Examples of exaptation*

In this section, we consider three cases of linguistic change: the reuse of the genitive inflection as a definite determiner in Swedish and Dutch (§3.1); the reuse of adjectival agreement markers as nominalizers in Swedish (§3.2) and the reorganization of adjectival inflection in varieties of Dutch. In each case, we outline the developments, consider the extent to which they constitute examples of exaptation, and explore how the changes may be modelled within a construction grammar framework.

1.4 *Genitives in Swedish and Dutch*

In this section we will discuss two historical genitive constructions: the former masculine and neutral genitive singular suffix *-s* in both Swedish and Dutch, and Dutch constructions involving the definite article *der*, formerly used in feminine genitive singular NPs as well as in plural genitive NPs. As noted by Booij (2010: 215), "[t]he term 'genitive construction' is often used in the literature as a convenient label for such constructions. Strictly speaking, however, this is not appropriate since in most of these languages regular case marking has been lost, and hence the term 'genitive construction' is an etymological label only."

Our central claim is that the historical genitive inflection *-s* in certain Germanic languages became newly analysed as a definite determiner, as the category of determiner became more sharply identifiable over time (category strengthening in the sense of Hudson 1997). However, we will see that languages vary widely in the extent to which this new subschema becomes productive -- whereas the Swedish s-genitive features a wide range of host classes, Dutch *-s* is very restricted. As far as the Dutch *der*-genitive is concerned, we argue that this is a case whereby a subschema becomes isolated, but without changes to its form or meaning, in other words, it does not become realigned to another higher-level schema. It persists where other formally and functionally related constructions fall into disuse. We return to a discussion of Dutch genitives in section 3.1.2, but begin with the changes affecting Swedish.

1.4.1 *Swedish* -s

The most common possessive construction in Swedish is the S-GENITIVE CONSTRUCTION, which historically derives from an Old Swedish word-marking inflectional genitive ending, but in Modern Swedish is a phrase-final marker, which has been analysed as a phrasal affix (Börjars 2003) or a clitic (Norde 2006). Its phrase-marking status is most clearly evidenced by so-called group genitives, in which the genitive marker is attached to full noun phrases, e.g., NPs containing a relative clause, examples of which are provided in (2). These examples also show that the host to which *-s* is enclitically attached may be parts of speech that were never inflected for genitive case, such as adverbs ((2a)), tensed verbs ((2b)), or (stranded) prepositions ((2c)).

(2) a. *Nu ligger jag iaf nerbäddad i sängen och lyssnar på regnet och*
den där feta katt-en som bor härs *jamande*.
[that there fat cat-DEF that lives here]=S meowing
"Anyway, now I am lying in my bed and listen to the rain and the meowing of that fat cat that lives here".
[https://florhage.wordpress.com/category/javla-gnall/]

b. *det är ju* den *som rökers problem*
it is well [the.one who smoke]=S problem
"Well, it is the problem of the person who smokes"
[andreajanina.bloggplatsen.se/sida-6/]

c. *jag tycker det är roligt att läsa*
människor man jobbar meds tankar
[people one work with]=S thoughts
"I think it is funny to read the minds of people one works with"
[rikardw.blogg.se/2011/january/blogg-logg.html]

The development from affix to phrase marker has been outlined by Delsing (1991) and Norde (1997, 2013a). The story is very complex, and difficult to trace in corpora (which for older Swedish are mostly untagged; cf. Norde 2013b). In Older Swedish, the genitive suffix *-s* was attached to every single element in the noun phrase,[ii] e.g., to indefinite article, adjective and noun in (3a), and to possessive pronoun and noun in (3b). Genitives mostly preceded the head noun, as in (3a), but they could follow it too, as in (3b) (see Norde 1997 for details).

(3) a. *diæfwllin kom til hans*

j	*en-s*	*vng-x*	*man-z*	*liknilse*
in	a-M.GEN.SG	young-M.GEN.SG	man-M.GEN.SG	shape

"The devil came to him in the shape of a young man"

[ST; 1430-1450]

b. *En dagh hon sat ensamin ok græt*

for	*søøt*	*aminnilse*	*sin-s*	*son-s*
for	sweet	memory	her.REFL-M.GEN.SG	son-M.GEN.SG

"One day she was sitting by herself, and cried for the sweet memory of her son"

[Bild; 1400-1450]

When Swedish gradually lost its case system, concord between noun and modifiers was mostly given up, and in the case of genitive *-s*, the suffix became a phrase marker, invariably attached to the last element in the NP, which was mostly the noun. Group genitives appear later, first in noun phrases with a postmodifying prepositional phrase (Norde 2013a). The rise of group genitives in Swedish is clearly linked to the demise of the case system, but also to changes in the Swedish NP, in particular the emergence of a fixed slot for determiners, which enabled the genitive to be reanalysed as a determiner.[iii]

We consider the changes we have described to constitute a good case of the kind of change we described in section 1.3. General case loss had consequences across the linguistic system of Swedish, since case was implicated in various schemas. For example, constructions involving genitive direct objects (after verbs expressing the genitival relation of gain or loss) came to be realigned to the more schematic TRANSITIVE VERB construction. This can be seen as the effect of degeneracy (Van de Velde 2014) — since there were other schemas involving direct objects and prepositional complements, the loss of genitive-marked objects and complements (which had low type frequency too) could easily be compensated for. In the case of attributive genitives on the other hand, which had long been the dominant schema for possessive expressions (both in terms of type and token frequency), strengthening of another schema (e.g., periphrastic possessive constructions by means of pronouns or prepositions) did not occur. Here, the former genitive inflection *-s*, which had already developed into a phrase marker in premodifying attributive genitives (see Norde 2006, 2013a for details) was reanalysed as a determiner. In other words, a new link had been established to the DETERMINER schema. Subsequently, the S-GENITIVE CONSTRUCTION was optimized for this

function (or adapted, in evolutionary terms), because it gradually spread to nouns of declensions that did not traditionally have a genitive in *-s*, as well as to noun phrases of increasing complexity. Type frequency increases strongly, because the other genitive inflections are lost, which means that the genitive construction becomes more general and schematic; and the procedural function of determiner elements suggests this is a clear case of grammatical constructionalization. Since this is discussed in detail by Trousdale and Norde (2013), we do not repeat their analysis here, but move on to the development of the genitive constructions in Dutch.

1.4.2 *Dutch* -s

In Middle Dutch, *-s* was the genitive singular ending of a number of masculine and neuter nouns, which occurred in a number of constructions, e.g., in possessive genitives ((4a-b)), partitive genitives ((4c)), or subjective genitives ((4d-e)) (Van der Horst 2008: 575, 761-763). Like in Old and Middle Swedish, both nouns and modifiers are inflected for genitive. On the other hand, there are some differences in word order, with post-head genitives (as in (4a)) being more common. If the genitive NP contains a PP the possessor may be split (example (4d)), like in Old and Middle Swedish, but the entire possessor NP may follow the possessor noun ((4e)), a construction not found in Swedish.

(4) a. *die stoel sijn-s eerst-es wijf-s*
the chair his-N.GEN.SG first-N.GEN.SG wife-N.GEN.SG
"his first wife's chair"

b. *des keyser-s stoel*
the.M.GEN.SG emperor-M.GEN.SG chair
"the emperor's chair"

c. *een pont speck-s*
a pound bacon-N.GEN.SG
"a pound of bacon"

d. *des connestabel-s camere van Franckerijke*
the.M.GEN.SG constable-M.GEN.SG room of France
"the constable of France's room"

e. *zonder oorlof des keyser-s van romen*
without consent the.M.GEN.SG emperor-M.GEN.SG of Rome

"without the emperor of Rome's consent"

In Modern Dutch, the case system is no longer productive, but some vestigial inflection remains (Booij 2010: 211-228, Scott 2011, 2014). The genitive case has disappeared as a productive schema, but Dutch still has a few constructions featuring the *s*-morpheme, i.e., the DEFINITE *-S* CONSTRUCTION, the PARTITIVE *-S* CONSTRUCTION and CONSTRUCTIONAL IDIOMS WITH- *S*. In what follows, we will only discuss the first two examples.[iv]

The DEFINITE *-S* CONSTRUCTION is a prenominal possessive construction (Booij 2010: 216), where *-s* is being attached to proper names ((5a-b)), nouns denoting family relations ((5c)), as well as some pronouns ((5d)). The *s* is always phrase-final, that is, when the possessor NP contains an adjective, as in (5c), or consists of two co-ordinated nouns, as (5e), *s* is invariably attached to the rightmost noun.

(5) a. *Jan-s hoed*
"John's hat"

b. *Amsterdam-s rijke verleden*
"Amsterdam's rich history"

c. *mijn moeder-s naaidoos*
"my mother's sewing box"

d. *niemand-**s** schuld*
"nobody's fault"

e. *Jan en Piet-s vader*
"Jan and Piet's father"

As in Modern Swedish, Dutch noun phrases ending in *-s* function as a determiner, so that they cannot collocate with a definite article (**de Jans hoed*). However, group genitives do not occur — when the possessor is a complex NP, a possessor doubling construction is preferred (Booij 2010: 219):

(6) a. **De koning van Engelands kroon*
"the king of England's crown"

b. *de koning van Engeland z'n kroon*
"the king of England his crown"

Booij (2010: 221) considers the Dutch premodifying genitive as a construction "in which a pre-nominal NP with certain semantic properties functions as a definite determiner. It is a pattern that is productive since the slots for the noun and the preceding determiner are open ones, but with semantic restrictions on the kind of nouns that can be inserted", for which he proposes the following constructional schema:

(7) $[[\ldots. [x\text{-}s]_{N}]_{NPi} N_{j}]_{NPk}$ ↔ $[\text{the} \ldots N_{j} \text{ of } NP_{i}]_{k}$

In this schema, the variable *x* stands for the stem of the possessor noun. Crucially, the schema in (7) is partially substantive in that it includes the morpheme *-s*, so Booij considers it as a case of 'construction-dependent morphology'.

Another Modern Dutch construction deriving from a Middle Dutch genitive construction is the PARTITIVE *-S* CONSTRUCTION (cf. example (4c)). The partitive genitive has generally been replaced by juxtaposition of two NPs (e.g., *een pond spek* "a pound of bacon"). It is retained in some idiomatic expressions, such as (8a). Note that this example is an idiomatic expression – for partitive meaning the noun has to be unmarked, as in (8b) (Booij 2010: 223-228).

(8) a. *niet veel soep-s*
not much soup-S
"of low quality"

b. *niet veel soep*
not much soup

Apart from such fixed expressions, the *s* still occurs in a specific type of partitive construction, in which it follows a quantifier

(9) a. *iets groen-s*
something green-S

b. *een heleboel lief-s*
a lot sweet-S
"lots of love"

c. *veel mooi-s*
much beautiful-S

"many beautiful things"

The schema exemplified in (10) is fully productive — most adjectives can be used.[v] Booij argues that this is not a case of contextual inflection, because only adjectives occur in the s-form, not nouns (unless idiomatically, cf. (8a)). Other accounts (see Booij 2010 for references) of the construction consider the adjectives in *-s* as nouns, with *-s* as a category changing morpheme. Booij however does not consider the forms in *-s* as nouns because pronouns like *iets* do not occur in partitive constructions with nouns (**iets water* "some water"). Moreover, the form in *-s* can be modified by an adverb, which suggests that it still an adjective:

(10) a. *iets heel lastig-s*
something very difficult-*s*
"something very difficult"
b. *iets volgens mij ongelofelijk-s*
something according.to me unbelievable-s
"something that I find unbelievable "

The other problem with the analysis of s-forms as nouns is that they do not occur in other adjective-noun conversions (**het lastigs* "the difficult thing"). For these reasons, Booij (2010: 227) proposes to analyse this particular type of partitives as sanctioned by the following constructional schema:[vi]

(11) $[NP_i \ldots [x\text{-}s]_A]_{APj}]_{NPk} \quad \leftrightarrow \quad [Quantity_i \text{ with } Property_j]_k$

Both the DEFINITE *-S* CONSTRUCTION and the PARTITIVE *-S* CONSTRUCTION represent (partially substantive) constructional schemas, with high type frequency. Booij (2010: 235) concludes his survey of construction-dependent morphology with the important observation that "inflectional markers that form part of syntactic constructions may be preserved as markers of these constructions, even though the inflectional system in which it had an identifiable morpho-syntactic role has disappeared." In the DEFINITE *-S* CONSTRUCTION and the PARTITIVE *-S* CONSTRUCTION, the use of the former genitive morpheme enabled the preservation of some syntactic patterns, i.e., the prenominal use of NPs as determiner phrases, and the postnominal use of APs as modifiers of (quantifier) nouns. In what Booij has termed constructional idioms

(see footnote 3), the former genitive morpheme survives as a marker of semantically specific and lexically restricted constructions.

From the point of view of exaptation and constructional change, we observe that the DEFINITE -*S* CONSTRUCTION and the PARTITIVE -*S* CONSTRUCTION, although originally involving the same inflection, are not entirely parallel. Both involve the same inflection, and in both developments, this inflection was reanalysed as constructional marker, but only the former case involves exaptation. The DEFINITE -*S* CONSTRUCTION we consider to be a case of exaptation, albeit less canonically than the related change in Swedish.[vii] It is reuse in the sense that it is realigned to a new schema (the DETERMINER CONSTRUCTION). As we have seen however, type frequency of the DEFINITE -*S* CONSTRUCTION has decreased substantially since Middle Dutch times, as it is now largely restricted to personal names and nouns denoting family relations. In other words, we see reduction instead of expansion. The absence of new formations, such as group genitives also suggests that the constructional changes affecting the determiner construction in Dutch are not precisely the same as those affecting Swedish. This means that it may not be the subschema of binominal genitive constructions that has been exapted, but only a set of similar micro-constructions. [viii] Unlike in Swedish, possession came to be primarily expressed by analytic constructions: the *van*-construction (similar to the English *of*-construction), or the possessor doubling construction (e.g., *Gerrit z'n fiets* (lit. "Gerrit his bike", "Gerrit's bike", *Greetje d'r nieuwe boek* (litt. "Greetje her new book", "Greetje's new book"). In other words, the DEFINITE -S CONSTRUCTION is the result of exaptation, but without subsequent optimization (adaptation) of the subschema.

In the development of the PARTITIVE -*S* CONSTRUCTION, a limited set of former partitive genitives (i.e., partitives following some quantifier pronouns), inherits from the QUANTIFIER CONSTRUCTION. The crucial difference with the DEFINITE -*S* CONSTRUCTION is, however, that this inheritance link is not new - in Middle Dutch, too, PARTITIVE constructions were linked to the QUANTIFIER CONSTRUCTION. In fact, this may explain why only this particular type of PARTITIVE construction has been preserved as a productive schema. However, since no new link has been established, we do not consider this a case of exaptation.

1.4.3 *Dutch* der

Scott (2014) discusses examples of another former genitive construction that had become marginal, but was still regular. This is the *X DER Y* CONSTRUCTION, genitive construction originally used for feminine and plural NPs, in which the definite article has the form *der*, as in (13).

(12) a. *een nieuw hoofdstuk in de geschiedenis der verkeerstechnologie*
a new chapter in the history the.GEN traffic-technology
"a new chapter in the history of traffic technology" [*INL 27 Mil.*, March 1994]
b. *Neem de maat van de breedte der plastic zakken.*
take the measurement of the width the.GEN plastic bags
"Measure the width of the plastic bags." [*INL 27 Mil.*, October 1994]

What is so interesting about the construction in (13a) is that there is still an agreement relationship between the article and the head noun, even though in standard Modern (Netherlandic) Dutch former masculine and feminine gender have merged into a common gender.[ix] Scott's extensive corpus-based study reveals two trends: most possessor nouns in these constructions are plural, and most singular nouns end in a suffix that was formerly associated with feminine gender. The predominance of plurals is not a side-effect of the predominance of plural nouns in the corpus (in which only 25.9% are plurals). Most NPs in this construction consist of a single noun, but complex NPs are not precluded, as the examples in (14) show:

(13) a. *die der inmiddels sterk geromaniseerde kelten*
those the.GEN meanwhile strongly romanized Celts
"those of the meanwhile strongly Romanized Celts" [*Eindhoven*, popular science, 35100]
b. *de huidige omstandigheden der tijdens de Tweede*
the current circumstances the.GEN during the second
Wereldoorlog door de Japanse (militaire) autoriteiten
world-war through the Japanese (military) authorities
tot prostitutie gedwongen vrouwen
to prostitution forced women
"the current circumstances of the women who were forced to prostitution by the Japanese (military) authorities during the Second World War" [*INL 27 Mil.*, Sept. 1994]

Scott (2014: 115) convincingly argues that the *X DER Y* CONSTRUCTION could be preserved thanks to the 'conserving effect' (Bybee 2010: 24; cf. section 1.2 above) of the relatively high

token frequency of postnominal attributive genitives with *der.*[x] During the demise of the Dutch case system, marking of grammatical relations became increasingly dependent on word order. In this situation, Scott argues, the *X DER Y* CONSTRUCTION was preserved, because:

> […] the adnominal genitive structure (whose prime exponent was *x der y*) remained a coherent unit into which two noun phrases could be placed at either side of the element binding them together. Familiarity through high token frequency led to the chunking of *x der y*, whose entrenchment was straightforward as it was both self-contained and highly familiar. Having become entrenched as a means of connecting two noun phrases, it remained in use and outlived the case system of which it had once been a part. Thus, the conserving effect of its high token frequency (and high type frequency), along with its unit-like nature, led to the survival of *x der y*. (Scott 2014: 118)

Adopting Booij's formalism (see preceding section), we propose the following schema for the *X DER Y* CONSTRUCTION:

(14) $[[\ \ldots\ [x]_N]_{NP_i}$ [der … $[x]_N]_{NP_j}]_{NP_k}$ ↔ $[\text{the}\ \ldots N_j\ \text{of}\ NP_i]_k$

The preservation with certain feminine nouns may have been due to 'increasing awareness' (Scott 2014: 119, 126) of noun gender, the result of a strong prescriptive written norm in the 18th and 19th centuries (when the distinction between masculine and feminine had already disappeared from many spoken varieties). Later however, language users were no longer taught to distinguish between masculine and feminine gender. This led to the loss of *x der y* with simplex feminine nouns, but not with derived nouns. Such nouns, e.g., those formed with the suffix *-heid*, are found in a number of micro-constructions:

(15) a. *de spiraal der eenzaamheid* "the spiral the-GEN loneliness"
b. *de engel der gerechtigheid* "the angel the-GEN justice"
c. *de grenzen der redelijkheid* "the borders the-GEN rationality"
d. *de zaak der elektrische veiligheid* "the matter the-GEN electric security"

Such 'discontinuous chunks' then led to increased productivity of the pattern, or 'self-perpetuation' as Scott (2014: 120) calls it. An additional explanation for the preservation of the *X DER Y* CONSTRUCTION is its usage as a stylistic marker (it is largely restricted to written language, occurs in mock-archaisms etc.). In informal registers, the construction seems far less productive - examples such as (14a-b), for instance, are very unlikely to be attested in spontaneous speech.

Thus, the emergence of the *X DER Y* CONSTRUCTION is in some ways similar to the definite and partitive *-s* constructions discussed above. Like the former genitive suffix *-s*, the former genitive form of the definite article *der* (feminine and plural) has become a constructional marker. In addition, it had likewise become isolated in the constructional network, when, as part of the more general case loss we have been discussing, the other genitive form of the definite article, *des* (masculine and neuter singular), became highly constrained. Because of its high type frequency however, particularly in (mock) formal style, it became entrenched as a partially substantive constructional schema, that is (still) sanctioned by the POSSESSIVE construction schema. However, (postmodifying) *der*-genitives are not determiners; hence they are compatible with indefinite possessees, as these examples show:

(16) a. *Receptenboek, vermoedelijk samengesteld door een lid der familie Schimmelpenninck of Dedel*
"Book, of recipes, probably collected by a member of the Schimmelpenninck or Dedel family."
[www.gahetna.nl › Collectie › Catalogus]

b. *Is de bijenteelt een bedreiging der natuur?*
"Is beekeeping a threat to the environment?"
[https://library.wur.nl/ojs/index.php/bijenhouden/article/viewFile/.../9228]

In other words, since no new inheritance link has been established for the *X DER Y* CONSTRUCTION, this is not a case of exaptation.

1.5 *Adjectival* -er *in Swedish and Danish*

In Old Swedish (ca. 1225-1375), *-er* was the MASC.SG.NOM suffix for most masculine nouns, as well as for adjectives agreeing with masculine nouns in both attributive ((17a)) and predicative ((17b-c)) constructions:

(17) a. *Aff dauid konung kom salomon wise /*
Of David king came Salomon wise /
rik-er konung-er oc wældogh-er
rich-M.NOM.SG king- M.NOM.SG and powerful-M.NOM.SG
"After king David came Salomon the Wise, a rich and powerful king" [Mose]

b. *æn esaw wardh ond-er oc awundzsiwk-er*
but Esau became evil-M.NOM.SG and jealous-M.NOM.SG
"But Esau became evil and jealous"
[Mose]

c. *oc waknadhe swa rædd-er aff drøm-enom*
and woke up so frightened-M.NOM.SG of dreams-DEF.DAT.PL
"and he woke up, so frightened by his dreams" [Mose]

In Middle Swedish (ca. 1375–1526), *-er* was largely lost as a nominative singular suffix in nouns (Wessén 1968: 137-138), starting in definite forms.[xi] In adjectives however, *-er* was preserved considerably longer. As a result, noun phrases in which only the adjective was inflected were not uncommon in this period (Norde 2001: 258-261):

(18) *thiit kom oc een vng-er konung*
tither came also a young-M.NOM.SG king-Ø
"A young king came there as well" [ST]

In an extensive monograph on adjectival *-er* in the history of Swedish, Ejder (1945: 246) maintains that the adjectival suffix may be considered productive until the first half of the 18th century, even though the nominative case itself had disappeared from the language. For instance, in Swedish poetry from the 16th century onwards, adjectives in *-er* alternated with adjectives without the suffix, for reasons of rhyme and metre (Ejder 1945: 179-192). Thus, in (19a), the adjective *döf* "deaf" appears in the form *döfuer* in order to preserve iambic metre (note that the adjective *blind* "blind" does not have *-er*); in (19b), *-er* is added to the adjective *trött* "tired" because it needs to rhyme with *Fötter* "feet" in the next line; same goes for example (19c), even though the noun is feminine which in Old Swedish could not agree with a masculine form of the adjective; in (19d), finally, the adjective *svart-er* forms part of a

direct object NP, which would also violate Old Swedish morphology since *-er* was exclusively masculine nominative singular and hence could not occur in direct objects.

(19) a. *dy han eij blind och döfu-er war*
for he not blind-Ø and deaf-ER was
"for he was neither deaf nor blind" [1610s]

b. *Iagh är af ängzlan matt och trött-er (: Fötter)*
I am of fear weary and tired-ER (: feet)
"I am weary and tired from fear" [end of 17th century]

c. *Som fluga-n quick och snäll-er (: fäller)*
Like fly-F.SG.DEF lively and sweet-ER (: fells)
"As the fly, lively and sweet" [middle of 17th century]

d. *Hyrde sig en svart-er rock*
Hired himself a black-ER cloak
"He hired himself a black cloak" [end of 18th century]

However, the construction that is relevant for the purpose of this paper is the adjectival noun construction, illustrated in (20), whereby the adjective is correctly inflected for nominative when it is the subject and for accusative when it is the direct object:

(20) *Kan ock en blind-er ledha en blind-an [...]?*
Can also a blind-M.NOM.SG lead a blind-M.ACC.SG
"Can a blind man also lead a blind man?" [Svenska Akademiens Ordbok]

Ejder (1945 : 240) provides several examples of this construction, but notes as well that the inflection was by no means obligatory in older Swedish, and in Modern Swedish it has disappeared altogether, so that the bare form of the adjective may be used in nominalizations: *en blind* "a blind (one)". It has been retained only in those constructions where it had an emphatic, intensifying function, which may explain why the suffix was retained best in adjectives expressing an emotional judgment, e.g., *en dummer* "a stupid one". We will therefore term these formations EMPHATIC -ER constructions. Once this reanalysis as a derivational suffix had occurred, the suffix could also be attached to nouns expressing disgraceful activities, e.g., e.g., *en fjäsker* "a fawning one" (< *fjäsk* "fawning behaviour") or *en slarver* "a messy one" (< *slarv* "mess") (Pettersson 2005: 171). Interestingly however, the

suffix also developed an affectionate meaning, e.g., when talking to children (Norde 2012: 29n.), or in some of the names of the seven dwarfs (in Disney's version of *Snow White*): *Trötter* "Sleepy", *Butter* "Grumpy", *Blyger* "Bashful", *Glader* "Happy", *Toker* "Dopey" and *Kloker* "Doc".

Information on token frequency in informal written Swedish is given in Table 1. All in all, it is evident that productivity of the suffix is rather limited, and type frequency is low, although some tokens may be relatively frequent, e.g., *dummer* "stupid one" and *kloker* "smart one", exemplified in (21a-b). Note also that forms in *-er* have lost their "masculine" connotation entirely – in (21c), the adjective refers to a feminine antecedent. Inflection of the nouns in *-er* is marginally possible: *slarver* (messy-ER) can be pluralized as either *slarvrar* or *slarvers* (Parkvall 2008).

(21) a. *Jag är ju vänsterhänt din dumm-**er**!*
I am in fact left-handed your stupid-ER
"You know, I am left-handed, you fool! [Bloggmix 2011]

b. *Jamen visst , fan va klok-**er** du är!*
Yeah right devil how clever-ER you are
"Yeah right, you're so damn clever!" [Flashback Forum]

c. *Min mamma är nog tvärtom, en slarv-er*
My mum is rather opposite, a messy-ER.
"My mum is rather the opposite, a messy person" [Bloggmix 2008]

form	***n***	***base***	***PoS of base***	***usage of form***
dummer	1262	*dum* "stupid"	Adjective	mostly as Noun
kloker	350	*klok* "clever"	Adjective	mostly as Noun
slarver	3,132	*slarv* "mess"	Noun	mostly as Noun
fjäsker	3	*fjäsk* "fawning behaviour"	Noun	Noun
spjuver	635	*spjuv* "rascal" / OSw *spiūta* "to spew"	Noun Verb	Noun
toker	684	*tok* "fool"	Noun	mostly as Noun
trötter	3,848	*trött* "tired"	Adjective[xii]	dialectal; used as variant of

				'bare' adjective
glader	2,996	*glad* "happy"	Adjective[xiii]	dialectal; used as variant of 'bare' adjective
blyger	331	*blyg* "shy"	Adjective	both Noun and Adjective
spelevinker	9	*spelevink* "joker"	Noun	Noun
pigger	53	*pigg* "energetic"	Adjective	Mostly as Adjective

Table 1: Token frequency of some forms in -er in the social media subcorpora (7.48G tokens) at Språkbanken[xiv]

From a constructional perspective, we observe that the development of *-er* involves the loss of a schema, and *-er* at the micro-constructional level has become a constructional marker for a small cluster of nouns. Originally, these were nominalized adjectives, but the pattern has been extended to some nouns, meaning there is no clearly identifiable word formation pattern.

We consider this a case of exaptation, since association with the NOMINATIVE construction is lost, implying the severance of an important inheritance link. The link to the NOMINALIZER construction is not novel, but the emphatic function is. However, as in the case of the Dutch DEFINITE *-S* construction, the subschema is hardly productive, but rather consists of a set of similar EMPHATIC *-ER* micro-constructions. Links in this cluster are predominantly local (or "lateral" in Norde's (2014) terminology). As is evident from Table 1, some of the micro-constructions are antonyms ("stupid" – "clever"; "tired" – "energetic"), others are very similar in meaning ("joker" – "rascal" – "fool"). Summing up, although there has been an exaptation of the suffix *-er*, the expansion to a handful of nouns from the same semantic domain is too limited to speak of subsequent adaptation.

A similar, but not parallel, development can be observed in the history of Danish (Jensen 2011, this volume). In Danish, the demise of the Old Scandinavian case system set in earlier than in Swedish. As early as in Early Middle Danish (ca. 1100-1350), the first signs of inflectional wear and tear become evident. One interesting development was a new division of labour between the nominative case and the accusative case, whereby the nominative is used for emphasis, or new information, and the accusative (or an unmarked form in all other contexts.[xv] For example, Jensen shows that the nominative is far more common in subject complements (which often convey new information) than in subjects, which often carry background information. This is consistent with Wessén's (1968: 137) observation, mentioned above, that *-er* was earlier lost in definite nouns. As Jensen explains, definite nouns typically refer to established discourse participants, so they are less likely to be marked

for nominative if the nominative is increasingly used to express new or salient information. Furthermore, a fairly recent study by Johnson (2003) corroborates Jensen's suggestion that the Swedish nominative underwent a similar functional shift. A second parallel between Swedish and Danish is the 'erroneous' use of *-er* in later texts, e.g., in adjectives with feminine referents. By 1500, the loss of the Old Danish case system had been largely completed and although inflected forms, including forms in *-er*, are still attested, they appear in morphosyntactic environments where they would have been ungrammatical at an earlier stage (similar to the Swedish examples in (19)).

However, some significant differences can be observed as well. First, the Danish textual functions included one of topic shift, for which there is no evidence in Swedish. Secondly, the developments in Danish occurred much earlier, some 200 years. But most crucially, Danish *-er* never developed into a derivational suffix. It did acquire a connotation of subjective evaluation, and, later still, of condescension and ironic admiration, but this function is restricted to a handful of idiomatic expressions in which *-er* is attached to an adjective, as in (22):

(22) a. *en* *flink-er* *fyr*
a nice-ER fellow
"a nice guy"

b. *en* *slemm-er* *karl*
a bad-ER guy
"a bad guy"

Crucially, the new function of textual foregrounding was developed at a time when the Danish case system was still in function (albeit with the first signs of decay). According to Jensen (this volume), the question of whether *-er* should be seen as an instance of exaptation depends on its definition, or, more precisely, on the degree of prominence given to its various "characteristics". Jensen furthermore calls into question the usefulness of the concept of exaptation in linguistics, because it has so many interpretations. In her case study, she argues that she does not need the concept because the changes can be accounted for by reanalysis and the regular semantic pathway of ideational to textual meaning. However, we believe that instead of trying to establish whether specific terms can "capture" what happens to marginalized morphemes, a more apposite question is *why* functional renewal occurs, and whether functional renewal is in any way constrained. What may have been the case here is

that with the gradual demise of inflectional systems, case features were no longer marked on referring (nominal) constructions. As a result, nominative markers on most word classes disappeared, with the exception of those on some adjectives in predicative position. Some of those had sufficient token frequency to get entrenched, but others (presumably the less frequent ones) disappeared. There is no evidence that *-er* at any point came to be part of a new constructional schema (which in this case would have been a nominalization schema to derive nouns from adjectives). In other words, it did not develop into a constructional marker, like genitive *-s* and *der* in the preceding sections. Instead, a few isolated nodes persevered thanks to high token frequency, and possibly also thanks to the fact that they are still paradigmatically related to each other. This Danish example is similar to the Swedish example discussed above in the sense that a marginalized set of micro-constructions acquires a pragmatic function. This may be seen as exaptation, but with limited scope, and no adaptation following.

1.6 *Adjectival* -e *in Dutch and Afrikaans*

Like Swedish and Danish discussed in the preceding section, Dutch is a Germanic language that lost most of its nominal inflections. The case system has gone, and the masculine and feminine genders have merged into a common gender. In adjectives, only two forms remain: one with schwa, one bare. In plural noun phrases, only the form with schwa is used; in the singular, the choice between the bare form and the form in *-e* depends on three factors: (i) whether the noun which the adjective modifies is common or neuter, (ii) whether the noun is definite or indefinite, and (iii) whether the adjective is attributive or predicative.

(23) Attributive constructions

a. COMMON, INDEFINITE: *een gevaarlijk-e hond* “a dangerous dog”

b. COMMON, DEFINITE: *de gevaarlijk-e hond* “the dangerous dog”

c. NEUTER, INDEFINITE: *een gevaarlijk-ø paard* “a dangerous horse”

d. NEUTER, DEFINITE: *het gevaarlijk-e paard* “the dangerous horse”

(24) Predicative constructions:

a. *die hond is gevaarlijk-ø* “that dog is dangerous”

b. *dat paard is gevaarlijk-ø* “that horse is dangerous”

As the examples in (23) and (24) show, the opposition between bare and inflected adjectives has no function, yet adjectival *-e* is "remarkably resilient" (Van de Velde & Weerman 2014: 113). In fact, Van de Velde & Weerman show that some groups of Dutch speakers have reinterpreted this rudimentary inflectional system as in such a way that forms in *-e* are used in all attributive constructions (including (23c)), and uninflected forms in predicative constructions.

Previous L1 and L2 research has shown that the construction in (23c) is most problematic: learners of all age groups tend to overgeneralize the form in schwa in attributive position. Reasons for this overgeneralization may differ from group to group (Van de Velde & Weerman 2014: 118-119), but they argue that the most likely scenario is one in which L2 learners never acquire the construction in (23c), and their variant with the inflected adjective is spreading to L1 learners, for whom (23c) is marked. The result is a more transparent system in which schwa marks attributive adjectives, as opposed to non-inflected adjectives in predicative position. Van de Velde & Weerman's analysis is corroborated by a number of observations in (non-standard) Dutch,[xvi] which suggest that forms in schwa are becoming increasingly entrenched in the variant of Dutch as spoken by Moroccan immigrants and their children, one of the most significant groups of L2 learners in the Netherlands. Some examples of how a pattern of attributive adjectives in *-e* is establishing itself are given in (25). Example (25a) shows how final *-n* is deleted in material adjectives which originally end in *-en*, such as *gouden*, yielding an attributive adjectival form in *-e*. Similarly, final *-n* is being dropped in plural forms of higher numerals deriving from nouns, such as *duizende* in (25b), instead of *duizenden* "thousands".[xvii] Another strategy to produce attributive adjectives in *-e* is to add a schwa to adverbs modifying attributive adjectives, as in (25c), where the adverb *ontzettend* occurs with a schwa ending, which suggests that any element in what Van de Velde and Weerman (2014: 123) call "prefield modifiers in the NP", gets to have a form in *-e*.[xviii]

(25) a. *Alleen de goud**e** wereldbeker telt!*
Only the golden worldcup counts.
"Only the golden world cup matters!"

b. *Radcliffe is een van de duizend**e** kinderen*
Radcliffe is one of the thousand children
die in Engeland auditie deden voor de rol
that in England audition did for the part

"Radcliffe is one of the thousands of children in England that auditioned for the part"

c. *van dat ontzettend**e*** *geile natte haar*
of that awful sexy wet hair
"this awfully sexy wet hair"

Interestingly, the increasing association of schwa-inflected adjectives with the attributive slot not only affects the adjectives themselves, but also the preceding determiners, where forms in *-e* are on the decline (Van de Velde & Weerman 2014: 129-140). For example, the anaphoric pronoun *zulk* "such", or determiner-quantifiers such as *ieder* "each" or *sommig* "some", which like adjectives agree in gender, number and definiteness with the head of the noun phrase, may occur without the inflection in contexts where *-e* is required. As a result, the schwa suffix "seems to be increasingly used to discriminate two 'slots' or 'zones' in the NP prefield […]" (Van de Velde & Weerman 2014: 141).

(26) a. *met zulk vag-e uitspraken*
with such-Ø vague-PL statements
"with such vague statements"

b. *Daarom belt zij hem ieder dag op*
Therefore calls she him each-Ø day.COMM.SG PTC
"That's why she calls him every day"

Van de Velde & Weerman do not use the term itself, but according to Van de Velde (p.c.) exaptation is what they implicitly refer to when they write "If the adjectival inflection is in essence a vestigial feature, it may be refunctionalized. This recycling of morphology is common in a complex adaptive system such as language" (Van de Velde & Weerman 2014: 116). However, this case is rather different from those we have covered above. What we see here is not a marginalized piece of morphology, but rather optimization of the $[x\text{-e}]_{\text{ADJ}}$ pattern. Although the change does involve realignment, with uninflected adjectives in predicative position and inflected ones in attributive position, there is no new link to a higher-level schema. This means that this change does not involve exaptation according to our definition. Rather, the changes are a reflection of a shift from a more inflectional to a more syntactic system, which is consistent with the general drift from inflectional/analytic to syntactic/periphrastic marking of grammatical relations. Because syntactic position alone

determines the form of the adjective, gender and definiteness are no longer relevant. Put differently, the opposition between bare and inflected forms reflects participation in a referring construction (attributive adjectives) against participation in a predicating construction (predicative adjectives).[xix]

Further changes in adjective inflection can be found in Afrikaans, the descendant of Dutch that was brought to what is now South Africa by settlers in the 17th century. It is significantly different from European Dutch, as a result of contact with, primarily, local African languages and Malay. Rather than denoting a single variety, the term Afrikaans refers to set of varieties ranging from 'highly European-like' to 'moderately creole-like'. The three main varieties are Cape Afrikaans, Orange River Afrikaans and Eastern Frontier Afrikaans (Kotzé 2001: 382). This distinction is important, because, as we will see, changes in adjectival *-e* were not the same in all varieties.

The fate of Dutch adjectival *-e* in South African varieties is one of the primary examples in Lass's paper on exaptation.[xx] In 17th century Dutch, from which Afrikaans derives, adjectival inflection was already following the rules for adjectival inflection in present-day Dutch (discussed above), with an opposition between adjectives in *-e* and -Ø, whereby -Ø was used with neuter nouns in indefinite contexts, and *-e* in all other contexts. In early Afrikaans however, this grammatically conditioned opposition disappeared, with random distribution between the two adjectival forms as a result. This development is illustrated in (27): *-e* was originally used, among other things, to mark the common as opposed to neuter gender in indefinite contexts, as in (27a), but once the gender distinction was lost, *-e* could be used in both contexts, as in (27b).

(27) a. *een kleyn-e harpoen / een kleyn stuk*
a small-COMM harpoon /a small-NEUT piece

b. *een kleyn ~ kleyne harpoen / een kleyn ~ kleyne stuk*
a small harpoon / a small piece

At the stage illustrated in (27b), Lass argues, *-e* had become a junk morpheme. At the next stage, *-e* was exapted to mark particular classes of adjectives. Monomorphemic adjectives without stem alternation generally have no inflection (e.g., *diep* "deep", *blou* "blue"), unless they have a specific syllable structure, e.g., a sonorant + /d/ (*vreemde* "strange"), or a long or high vowel + /x/ (*droog* -> *droë* "dry")[xxi] (Lass 1990: 92). The form in *-e* came to be generalized to adjectives which are morphologically complex (e.g., affixed adjectives such as

ge-heim “secret” or *stad-ig* “slow”). The grammatical context in which the adjectives occurs is irrelevant — as shown in (28), the adjective in *-e* occurs both when the NP is indefinite singular (a), definite singular (b), or plural (c):

(28)	a.	*‘n*	*geheim-e*	*resep*	(Dutch: *een geheim-ø recept*)
		a	secret	recipe	
	b.	*die*	*geheim-e*	*resep*	(Dutch: *het geheim-e recept*)
		the	secret	recipe	
	c.	*geheim-e*		*resepte*	(Dutch: *geheim-e recepten*)
		secret		recipes	

In other words, what we have here is morphophonemically conditioned variation which, Kotzé (2001: 386) argues, is more complex than the original Dutch system.

As indicated above, the changes in adjectival inflection did not occur in all varieties. In Cape Afrikaans, adjectival *-e* was retained in monomorphemic adjectives as well (Kotzé 2001: 388-389), as shown in (29):

(29) a. *‘n ryke man*
“a rich man”
b. *die korte distansie*
“the short distance”

Interestingly, then, Cape Afrikaans is more similar to some informal varieties of modern Dutch than it is to other varieties of Afrikaans. Accordingly, what we wrote above about (non-)exaptation of Dutch adjectival *-e* also applies to this particular variety of Afrikaans. The changes in standard Afrikaans do not tally with our definition of exaptation either, but for another reason. Although there have been substantial constructional changes to the ADJECTIVE construction as a result of the loss of the grammatical categories of gender (of nouns and adjectives) and definiteness (of adjectives), no realignment to another schema has occurred. Rather, the former suffix *-e* fused with some adjectives for phonological reasons, and considering this a ‘new function’ would stretch our conceptualization of functions and (sub)schemas expressing them too far.

4. *Concluding remarks*

In our review of cases of morphological change, we have shown that the only case of exaptation cum adaptation (as in evolutionary biology) is the S-GENITIVE CONSTRUCTION, which was realigned to the higher-level DETERMINER CONSTRUCTION and expanded to NPs of whatever form or complexity. The only other two cases that we consider exaptation are the Dutch DEFINITE -S CONSTRUCTION and the Swedish and Danish EMPHATIC -ER CONSTRUCTION, but these are of limited productivity so they have not been optimized for their new function. In the other cases, no new links have been established, so we do not consider these changes as exaptations.

In conclusion, we have attempted to recast as constructional changes some developments in language which may traditionally be considered as exaptations. These changes are neoanalyses of morphological constructions which are recruited to new procedural functions and thus are realigned to different higher-level schemas. Many such changes involve an initial stage of loss of similarly behaving constructions in the network (e.g., the isolation of the genitive in various Germanic case systems, and the increasingly limited means of exponence of genitive in those languages). Once morphological constructions become isolated, speakers may come to reuse them with a new grammatical function. However, we have shown that isolation and loss is not a prerequisite for the kinds of constructional changes we have described here (in much the same way as exaptation in biology does not require the trait undergoing change to be functionless). We have shown how changes such as case loss proceeds stepwise (not everything is lost at once). But when some distinctions between terms in categories get lost, these markers of construction-dependent morphology no longer fulfil their original functions. In cases where there is a shift from inflectional to analytic constructions, the markers shift from operating at the morphological level of a construction (e.g., to mark case) to marking some other property of a construction (e.g., attributive in referring constructions, predicative in predicating constructions in the case of adjectival *-e* in Dutch and Afrikaans). It is certainly the case that the development of new procedural functions is one possible outcome of constructional, but new procedural constructions can also come into being from sources which are not isolated in any way (e.g., the development of pseudo-cleft constructions as discussed in Traugott and Trousdale 2013). Crucially, all change involves speakers and hearers realigning links in the constructicon; such realignment is neoanalysis, which we consider to be the primary mechanism of change.

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Note: Electronic versions of all texts used for this paper can be found at http://www.nordlund.lu.se/Fornsvenska/Fsv%20Folder/index.html

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[i] One reviewer points out that erstwhile meaningless phonetic strings may acquire meaning at some point, e.g., by means of rebracketing, as in *burger* (from *Hamburg-er*). We acknowledge this, but we would not consider such changes exaptation, because in our view, only strings that already form part of a subschema can be exapted (see section 2.3).

[ii] *-s* was the genitive singular of most masculine and neuter nouns (strong declensions), as well as of agreeing adjectives, articles and pronouns (strong inflections). Most genitives were attributive to nouns, but some verbs, prepositions and adjectives governed the genitive as well.

[iii] See Delsing (1991, 1993) for a generative account of this development, or Norde (2009: 165-166) for a summary of it.

[iv] Examples of constructional idioms are productive patterns such as *tot* V-INF-*s toe* (*tot brakens toe* "to the point of vomiting", *tot gek wordens toe* "to the point of becoming mad"; Booij 2010: 228-231), or the *des* N-*s* constructions (*zoiets is typisch* ***des vrouws*** "such a thing is typical of women"; Scott 2011: 118-119). Although these schemas are less productive than the definite and the partitive construction, they are also examples of genitive *-s* being reinterpreted as marker of a construction.

[v] There are some exceptions, e.g., material adjectives in *-en* or geographical adjectives in *-er* (**iets ijzerens* "something (made of) iron", **iets Groningers* "something from Groningen").

[vi] What still needs to be explained however, is why the partitive was lost with nouns (**een glas wijns* "a glass of wine"), except in idiomatic expressions (*een bete broods* "a morsel of bread" (originally from the 1637 Dutch bible translation), a construction which must have been far more common in older Dutch than the more marginal adjectival partitives.

[vii] A possible explanation for this difference is that circumstances under which exaptation took place were different. At the time when Swedish *-s* came to be exapted, it was predominantly premodifying and concordial case was becoming obsolescent, with the result that a single *-s* could be attached to multi-word NPs. Thus, *-s* neatly fell into the premodifying determiner slot. In Dutch on however, postposition was more common, and concordial case was preserved in masculine / neuter singular noun phrases. Another difference is that the Swedish definite article is suffixed (*mannen* "the man") and the original internal inflection (Old Swedish *man-s-en-s* (man-GEN-the-GEN) had largely given way to single inflection, as in Modern Swedish *mannen-s* "the man's". Dutch, on the other hand, has free articles (e.g., *des mannes* "the man's" (archaic)), and phrase marking did not develop (**de mannes*).

[viii] It can be debated whether this cluster of micro-constructions is still linked to an (unproductive) subschema, or whether they are only interparadigmatically linked to each other. Trousdale holds the former view, Norde the latter.

[ix] In the plural, there are no gender distinctions.

[x] By comparison, the *x des y-s* had much lower token frequency, because it was restricted to masculine and neuter singular NPs. Moreover, its complex structure with case concord was disappearing from the language, which meant *x des y-s* became isolated in the constructional network. Van Haeringen (1956: 33) already observed that *x des y-s*, with its double inflection, had less chances of survival because it had a "decidedly archaic" ring to it.

[xi] Scandinavian languages have two nominal paradigms: definite and indefinite (e.g., Swedish *hus* "house" versus *huset* "the house"). The suffix of definiteness developed out of a demonstrative pronoun, which came to be cliticized to nouns, initially retaining its own inflection. Thus, in Old Swedish, definite nominative singular of "fish" was *fisk-er-in* (fish-MASC.SG.NOM-DEF.MASC.SG.NOM), the genitive was *fisk-s-in-s* (fish-MASC.SG.GEN-DEF-MASC.SG.GEN), and so on.

[xii] It is generally assumed that these dialectal forms are direct continuations of Old Swedish MASC.SG.NOM adjectives. In some dialects, the adjective is still restricted to male referents (some Swedish dialects were far less affected by deflection than the ones from which standard Swedish emerged; a few of them even retained substantial parts of the old case system).

[xiii] See prevous note.

[xiv] Electronically available at http://spraakbanken.gu.se/. Searches performed on November 14th, 2014.

[xv] Note that this development concerns all nominatives, not just those ending in *-er*.

[xvi] Data are drawn from corpora of both newspaper texts and internet relay chats, with one corpus containing chats on Dutch websites particularly aimed at young people with a Moroccan immigrant background. See Van de Velde & Weerman (2014: 120) for details.

[xvii] Van de Velde & Weerman took great care to exclude other explanations for the forms in *-e*, such as typing errors or n-apocope (a common phonological process in spoken Dutch), by contrasting their findings with other words ending in *-en*, e.g., the verb *drink-en* "to drink". Deletion of final *n* was significantly less frequent in these control forms.

[xviii] We find this third example less convincing than the first two, because the phenomenon is widespread in many varieties of Dutch, to the extent that the default degree adverb *heel* "very" even occurs more often as *hel**e***, as Van de Velde & Weerman themselves note.

[xix] Note however that there is also an alternative explanation, which is the loss of the neuter gender in some varieties of Dutch (Kolkman 2011), as evidenced by such constructions as *deze meisje* instead of *dit meisje* "this girl"*, die huis* instead of *dat huis* "that house". In varieties with only one gender, speakers would always use the inflected form of the attributive adjective as well. That would mean, however, that the regularization of forms in *-e* is not suggestive of the emergence of a new schema (for attributive adjectives), but rather of the loss of one (the neuter NP). That is not exaptation either, though it is clearly a constructional change, given that a schema has been lost. See further Blom, Polišenka & Weerman 2008 for discussion of whether examples such as the ones in (28) are the result of overgeneralization of common gender or the non-acquisition of (25c).

[xx] On adjectival inflection in Dutch oversees varieties see also Van Marle 1995.

[xxi] See Kotzé (2001: 387-388) for more detailed discussion.